

**Conference Report: PerMin'12**  
**1<sup>st</sup> Indo-Japan Conference on**  
**Perception and Machine Intelligence**  
**January 12-13, 2012**  
**Kolkata, India**

**General Chairs:**  
**Sankar K. Pal**

**Program Chairs:**  
**Malay K. Kundu**  
**Sushmita Mitra**  
**Soma Mitra**

The 1<sup>st</sup> Indo-Japan Conference on Perception and Machine Intelligence (PerMin'12) was organized by Centre for Development of Advanced Computing (C-DAC), Kolkata in collaboration with National Institute of Information and Communications Technology (NICT), Japan and with the intellectual and technical support from Indian Statistical Institute (ISI), Kolkata. The conference was attended by about 100 participants from various parts of the world including USA, Japan, New Zealand and India. The participants were mostly university/institution faculty, research scholars, and personnel from R&D organizations. The event had an inaugural session, keynote address, invited lectures, contributory paper/poster presentations, demonstration of innovative products of C-DAC and a valedictory session.

The objective of this international conference was to present state-of-the-art scientific results, encourage academic and industrial interaction, and promote collaborative research and developmental activities in perception engineering, machine intelligence and related fields, involving scientists, engineers, professionals, researchers and students from India and abroad. The conference will be held in successive years to make it an ideal platform for people to share their views and experiences in the said areas. Particular emphasis was placed on pattern recognition and perception, human computer interaction techniques, computational theory of perception, cognitive systems, reception based E-nose and E-tongue, speech processing and analysis, apart from dealing with various pattern recognition/image processing problems. Tutorial, keynote, evening and invited speeches were delivered by scientists of international repute from both academia and industry. Technical sessions encompassed all these emergent areas. The conference gave a platform for young researchers to review the state-of-the-art, to present their research outputs, to interact and establish contacts with well-known senior researchers of the field.

Col A. K. Nath (Retd), Executive Director CDAC Kolkata in his welcome address set the pitch of the Conference by highlighting the multidisciplinary nature of this emerging frontier of advanced research. A large number of scientists and researchers from India and abroad presented their recent research outcomes. Chief Guest Prof Kankan Bhattacharya, Director, Indian Association for the Cultivation of Science, Kolkata delivered the inaugural address. Prof. Sankar K. Pal (General Chair), Prof. Malay K. Kundu (Programme Chair) of ISI Kolkata and Dr. Tatsuya Yamazaki, NICT, Japan also spoke on the occasion followed by the vote of thanks delivered by Smt. Soma Mitra (Programme chair).



**Group Photograph of PerMin'12**

The illuminating keynote address was delivered by Prof Jeremy M. Wolfe of Harvard University, USA. Three Plenary talks were delivered by renowned researchers like Prof. Subhash Mukhopadhyay of Massey University, New Zealand (Fellow of IEEE), Dr. Osamu Yamaguchi, Senior Scientist, Toshiba Corporation, Japan and Prof. Nikhil Ranjan Pal of ISI, Kolkata (Fellow of IEEE). The whole conference was well orchestrated by Dr. Nabarun Bhattacharyya, Mrs. Soma Mitra and Mr. Debasis Mazumdar.

The conference was started with Inaugural session followed by seven technical sessions consisting of 42 accepted papers including 6 papers from CDAC, Kolkata. The technical sessions were facilitated with the sharing of experiences, knowledge of the conference participants came from different domain in research activities. As part of the two day event, C-DAC Kolkata showcased few innovative products and technologies on Facial Expression Analysis, Face Recognition, Handwriting and Character Recognition, Speech Recognition, eNose, eVision and eTongue developed by it in the field of Perception Engineering. The latter three hold the great promise for quality benchmarking of Food and Agro produce both by the procurement agencies and the farmers themselves. This conference will be included in Indian Unit for Pattern Recognition and Artificial Intelligence (IUPRAI) association so that it can be easier for further conducting the conference in future.

More than 100 research papers were received for the conference out of which 42 papers were accepted for oral/poster presentation and publication in the conference proceedings which was published as Volume 7143 of the prestigious Lecture Notes in Computer Science Series by Springer. The conference was funded by DeitY, Ministry of Communication and Information Technology, Govt. of India, Department of Atomic Energy, Govt. of India, Department of Science and Technology, Government of India and the Council of Scientific and Industrial Research, Government of India.

## PerMIn'12 Committee Member List

### General Chair

Sankar K. Pal  
Indian Statistical Institute, Kolkata, India

### Advisory Committee

Rama Chellappa  
University of Maryland, USA

B. Yegnanarayana  
IIIT, Hyderabad, India

Andrzej Skowron  
Warsaw University, Poland

Dwijesh Dutta Mazudar  
Indian Statistical Institute, Kolkata, India

Hiroya Fujisaki  
University of Tokyo, Japan

Kazumasa Enami  
NICT, Japan

Kashiko Kodate  
Japan Women's University, Japan

Navin Vasishtha  
DST, India

Col. A. K. Nath (Retd.)  
CDAC, Kolkata, India

### Programme Chairs

Malay K. Kundu  
Indian Statistical Institute, Kolkata, India

Sushmita Mitra  
Indian Statistical Institute, Kolkata, India

Soma Mitra  
CDAC, Kolkata, India

### Programme Committee Members

Stefano Baldassi, Pisa Vision Lab, University of Pisa, Italy

Sudeep Sarkar, University of South Florida, CVPR group, USA

Dmitry Kirsanov, St. Petersburg State University, Russia

Masahide Kaneko, Univ. of Electro-Communication, Japan

Akihisa Kodate, Tsuda College, Japan

Eriko Watanabe, Univ. of Electro-Communication, Japan

Hitoshi Ohnishi, The Open Univ. of Japan, Japan

Tatsuya Yamazaki, NICT, Japan

K.R. Ramakrishnan, Indian Institute of Science, Bangalore, India

J.K.Mukherjee, Bhabha Atomic Research Center, India

Phalguni Gupta, Indian Institute of Technology, Kanpur, India

Pabitra Mitra, Indian Institute of Technology, Kharagpur, India

Jayanta Mukhopadhyay, Indian Institute of Technology, Kharagpur, India

Subhashis Banerjee, Indian Institute of Technology, Delhi, India

T. K. Basu, Indian Institute of Technology, Kharagpur, India

Santanu Choudhuri, Indian Institute of Technology, Delhi, India

Kanad Kishore Biswas, Indian Institute of Technology, Delhi, India

Subhasis Choudhuri, Indian Institute of Technology, Bombay, India

Sukhendu Das, Indian Institute of Technology, Madras, India

Dipti Prasad Mukherjee, Indian Statistical Institute, Kolkata, India

Ashoke Datta, Indian Statistical Institute, Kolkata, India

Bhabatosh Chanda, Indian Statistical Institute, Kolkata, India

Ashish Ghosh, Indian Statistical Institute, Kolkata, India

Amit Konar, Jadavpur university, Kolkata, India

Rajib Bandyopadhyay, Jadavpur University, Kolkata, India

Shyamal Kumar Dasmandal, Indian Institute of Technology, Kharagpur, India

Mallika Banerjee, Calcutta university, Kolkata, India

## PerMin'12 Conference Program Schedule

**12<sup>th</sup> January 2012**

### Inaugural Session

- |                     |   |
|---------------------|---|
| 8:30 AM– 9:30 AM    | <b>Registration</b>   |
| 9:30 AM – 9:35 AM   | <b>Invocation and presentation of Floral Bouquet</b>  |
| 9:35 AM - 9:40 AM   | <b>Welcome Address by ED, CDAC(Kolkata)</b>   |
| 9:40 AM – 9:50 AM   | <b>Address by Chief Guest</b>   |
| 9:50 AM – 10:00 AM  | <b>Address by Representative from Japan</b>   |
| 10:00 AM – 10:10 AM | <b>Address by General Chair, PerMin'12</b>  |
| 10:10 AM – 10:20 AM | <b>Address by Programme Chair, PerMin'12</b>  |
| 10:20 AM – 10:35 AM | <b>Inaugural address</b>  |
| 10:35 AM – 10:40 AM | <b>Vote of thanks</b>   |
| 10:45 AM – 11:15 AM | <b>Tea</b>  |
| 11:15 AM – 12:15 PM | <b>Key Note Address (Central Hall)</b><br>Topic : The rules of guidance in visual search, Speaker : Jeremy M. Wolfe   |
| 12:15 PM – 1:45 PM  | <b>Technical session (I) - Perception (Hall – I)</b> <ol style="list-style-type: none"><li>1. Contextual Effects in the Visual Cortex Area 1 (V1) and Camouflage Perception by Atanendu Sekhar Mandal</li><li>2. Affective Information Processing and Representations by Dana Sugu and Amita Chatterjee</li><li>3. Face Image Retrieval Based on Probe Sketch Using SIFT Feature Descriptors by Rakesh S, Kailash A, Ashish Arora, Bhabatosh Chanda and Pulak Purkait</li><li>4. Effect of Perceptual Anchorage Points on Recognition of Bangla Characters by Asok Bandyopadhyay, Bidyut Baran Chaudhuri and Bhaswati Mukherjee</li><li>5. Scaling properties of Mach bands and perceptual models by Ashish Bakshi and Kuntal Ghosh</li><li>6. Psycho-visual Evaluation of Contrast Enhancement Algorithms by Adaptive Neuro-Fuzzy Inference System by Apurba Das and Suparna Parua</li></ol> |
| 12:15 PM – 1:45 PM  | <b>Technical session (II) - Human Computer Interaction (Hall – II)</b> <ol style="list-style-type: none"><li>1. Theory of Mind in Man-Machine Interactions by Fumito Hamada and Edson T. Miyamoto</li><li>2. Face Recognition System Invariant to Light-Camera Setup by Naman Dauthal, Surya Prakash and Phalguni Gupta</li><li>3. Representing Feature Quantization approach using Spatial-Temporal Relation for Action Recognition by Sarvesh Vishwakarma and Anupam Agrawal</li><li>4. Human Computer Interaction with Hand Gestures in Virtual Environment by Siddharth Rautaray, Anand Kumar and Anupam Agrawal</li><li>5. Interval Type-2 Fuzzy Model for Emotion Recognition from Facial Expression by Amit Konar, Aruna Chakraborty, Anisha Halder, Rajshree Mandal and Janarthanan Ramadoss</li></ol>  |

1:45 PM – 2:45 PM     **Lunch**

2:45 PM – 3:30 PM     **Plenary talk (I) (Central Hall)**  
Face Recognition Technology and its Real-world Application by Osamu Yamaguchi

3:30 PM – 3:45 PM     **Tea**

3:45 PM – 5:45 PM     **Technical session (III) - E-Nose and E-Tongue (Hall – I)**

1. Profiling Scotch malt whisky spirits from different distilleries using an electronic nose and an expert sensory panel by Koichi Yoshida, Emiko Ishikawa, Maltesh Joshi, Hervé Lechat, Fatma Ayouni and Marion Bonnefille
2. Quality and Rancidity Control of Nut Mix Using an Electronic Nose by Koichi Yoshida, Emiko Ishikawa, Maltesh Joshi, Hervé Lechat, Fatma Ayouni and Marion Bonnefille
3. Estimation of Aroma Determining Compounds of Kangra Valley Tea by Electronic Nose System by Devdulal Ghosh, Ashu Gulati, Robin Joshi, Nabarun Bhattacharyya and Rajib Bandyopadhyay
4. Taste Attributes Profiling in Carrot Juice Using an Electronic Tongue by Dániel Szöllősi, András Fekete, Sandrine Isz and Marion Bonnefille
5. Improvement of Quality Perception for Black CTC Tea by Means of an Electronic Tongue by Arunangshu Ghosh, Bipan Tudu, Pradip Tamuly, Nabarun Bhattacharyya and Rajib Bandyopadhyay

3:45 PM – 5:45 PM     **Technical session (IV) - Image and Video Processing (Hall – II)**

1. Interactive Content Based Image Retrieval using Ripplet Transform and Fuzzy Relevance Feedback by Manish Chowdhury, Sudeb Das and Malay Kumar Kundu
2. Fast computation of edge model representation for image sequence super-resolution by Malay Nema, Subrata Rakshit and Subhasis Chaudhuri
3. Detection of Structural Concavities in Character Images - A Writer-independent Approach by Soumen Bag, Partha Bhowmick and Gaurav Harit
4. Semi-supervised Fuzzy Clustering Algorithms for Change Detection in Remote Sensing Images by Niladri Shekhar Mishra, Susmita Ghosh and Ashish Ghosh
5. SLAR (Simultaneous Localization And Recognition) framework for smart CBIR by Gyanesh Dwivedi, Sukhendu Das, Subrata Rakshit, Megha Vora and Suranjana Samanta
6. A Novel Statistical Model to evaluate the performance of EBGM based Face Recognition by Munmun Chakraborty, Kunal Chanda and Debasis Mazumdar
7. A New Proposal for Locality Preserving Projection by Gitam Shikkenawis and Suman K. Mitra
8. Self-Similarity and Points of Interest in Textured Images by Alfredo Petrosino and Shripad Kondra

6:15 PM – 9:00 PM     **Cultural Programme and Conference dinner**

## **13<sup>th</sup> January, 2012**

10:00 AM – 10:45 AM **Plenary talk (II) (Hall I)**  
Smart Sensing System for Human Emotion and Behaviour Recognition by  
Subhas Mukhopadhyay

10:45 AM – 11:15 AM **Tea**

11:15 AM – 12:30 PM **Technical session (V) - Machine-Intelligence and Application (Hall – I)**

1. A New Cross-Validation Technique to Evaluate Quality of Recommender Systems by Dmitry Ignatov, Jonas Poelmans, Guido Dedene and Stijn Viane
2. Rough-Fuzzy C- Means for Clustering Microarray Gene Expression Data by Pradipta Maji and Sushmita Paul
3. Topographic map object classification using real-value Grammar Classifier System by Lukasz Cielecki
4. Distance Measures in Training Set Selection for Debt Value Prediction by Tomasz Kajdanowicz, Slawomir Plamowski and Przemyslaw Kazienko
5. A second-order learning algorithm for computing optimal regulatory pathways by Mouli Das, C. A. Murthy, Subhasis Mukhopadhyay and Rajat K. De
6. Aggregation of Correlation Measures for the Reverse Engineering of Gene Regulatory Sub-networks by Ranajit Das and Sushmita Mitra

11:15 AM – 12:30 PM **Technical session (VI) - Speech and Signal Processing (Hall – II)**

1. Ordinal Incremental Data in Collaborative Filtering by Elena Polezhaeva
2. Combining Evidence from Temporal and Spectral Features for Person Recognition using Humming by Hemant Patil, Maulik Madhavi, Rahul Jain and Alok Jain
3. Novel Interleaving Schemes for Speaker Recognition over Lossy Networks by Hemant A. Patil, Parth A. Goswami and Tapan Kumar Basu
4. Class Dependent 2D Correlation Filter for Illumination Tolerant Face Recognition by Pradipta Banerjee, Jayanta Chandra and Asit Datta
5. Removing EEG Artifacts Using Spatially Constrained Independent Component Analysis and Daubechies Wavelet Based Denoising with Otsu' Thresholding Technique by G. Geetha and S.N. Geethalakshmi
6. Performance Evaluation of PBDP Based Real-Time Speaker Identification System with Normal MFCC Vs MFCC of LP Residual Features by Soma Khan, Joyanta Basu and Milton Samirakshma Bepari
7. Investigation of Speech Coding Effects on different Speech Sounds in Automatic Speech Recognition by A.V. Ramana, P. Laxminarayana and P. Mythilisharan

12:30 PM – 1:30 PM **Demonstration at discussion lobby**

1:30 PM – 2:30 PM **Lunch**

2:30 PM – 3:15 PM **Plenary talk (III) (Hall I)**  
Fuzzy Rule-Based Approaches to Dimensionality Reduction by Nikhil Ranjan Pal

3:15 PM – 3:45 PM **Tea**

3:45 PM - 5:15 PM **Technical session (VII) - Human Computer Interaction (Hall – I)**

1. Augmenting Language Tools for Effective Communication by Nandini Bondale and Gaurav Gupta
2. Design and Evaluation of a cognition aware file browser for users in rural India by Debmalya Sinha and Anupam Basu
3. Shiksha. A Novel Architecture for Tele-teaching Using Handwriting as a Perceptually Significant Temporal Media by Amit Singhal, Santanu Chaudhury and Sumantra Dutta Roy
4. A New Motion Based Fully Automatic Facial Expression Recognition System by Chandrani Saha, Washef Ahmed and Soma Mitra

5:15 PM – 5:45 PM **Valedictory Session**

### PerMin'12 Conference Proceedings

Number of Papers submitted : 100

Number of Papers accepted : 42

Review Process : Each paper was single blind reviewed by three reviewers .

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Proceedings of the conference have been published by Springer in the series  
Lecture Notes in Computer Science Volume 7143

